Flightfax
ARMY AVIATION RISK-MANAGEMENT INFORMATION
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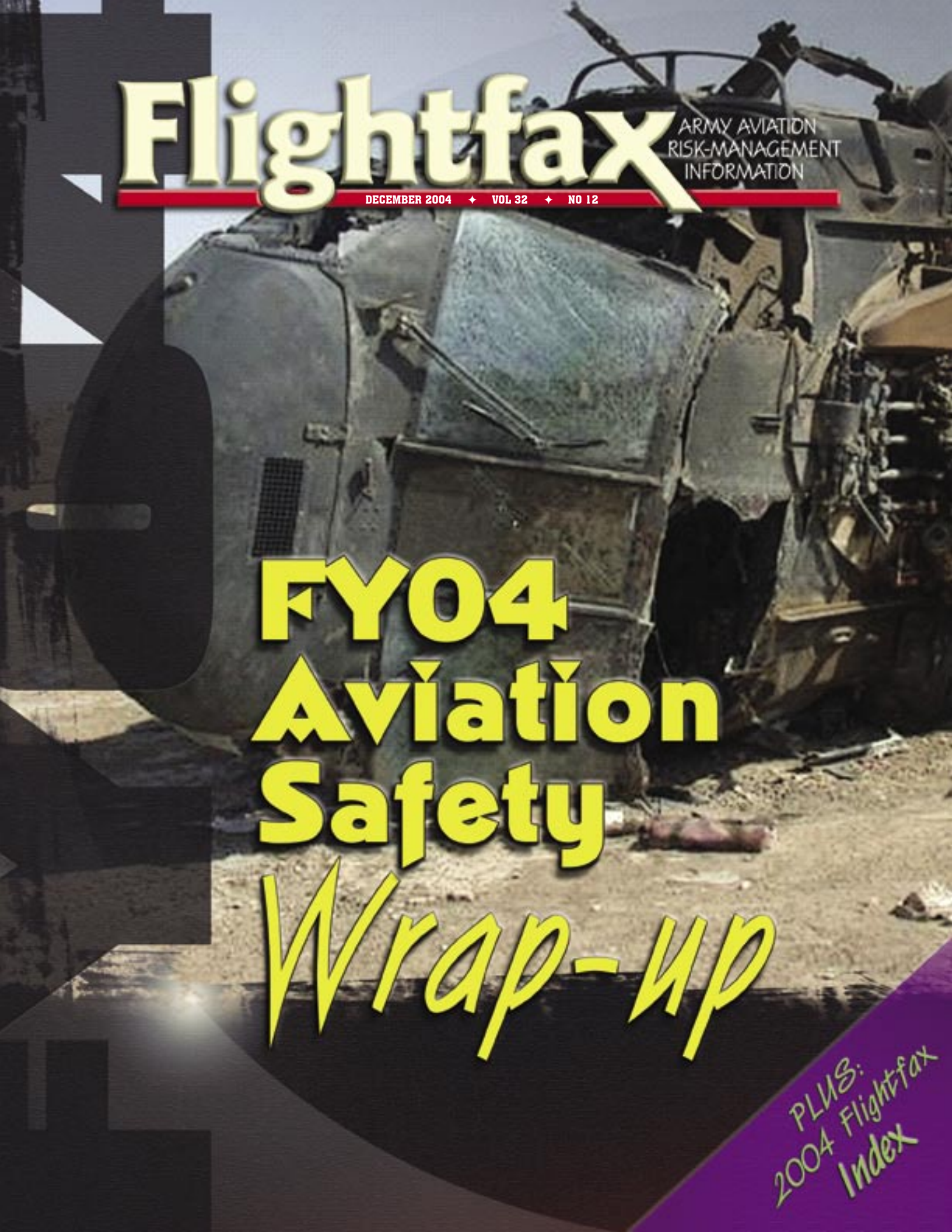

FY04 Aviation Safety Wrap-up

PLUS: 2004 Flightfax Index

Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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U.S. ARMY SAFETY CENTER

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JOSEPH A. SMITH
Brigadier General, U.S. Army
Commanding

DASAF's Corner
FROM THE DIRECTOR OF ARMY SAFETY

We're Listening!

As I travel around the Army, I continue to be impressed with the dedication and true grit of our Soldiers! We are an Army at War, transforming for the future. This means increased exposure and lots of changes. High OPTEMPO and change are the norm—not the exceptions.

Our Soldiers are mission focused. They don't want "admin or safety" to get in the way of progress. I agree and want to focus this month on how safety fits in the feedback we're getting from the field. Maybe it's the name "safety" that's getting in the way of Composite Risk Management (CRM). Performing solid mission analysis and using troop-leading procedures to reduce risk should be a good thing—not something that gets in the way.

CRM will help get us on the razor's edge and improve our chances of accomplishing tasks that appear very high risk or even impossible. So don't think safety; think CRM and get after it! My challenge to each of you: Look hard each day at what will kill you or our Soldiers and put control measures in place that will get the job done and still let everyone come back and brag about it. "See the enemy … see yourself." Before every mission, ask

"How can the enemy take me out, and what are the hazards that could cause an accident and take me out?"

There are many tools out there to help with CRM. You asked for them, and we are listening. Listed below are your comments, followed by what we are doing to respond.

"**Good tools, but poor connectivity**." Just like AKO Lite, we now have "Safety Lite" on the Safety Center homepage at **https://safety.army.mil**. The system will log on automatically with the most efficient connection based on your bandwidth. The Risk Management Information System is also now on SIPRNET. Log on and try these tools out!

"**Commander's Safety Course—not good**." An entirely new version of the course will be available online by the middle of this month. It's modular in design and easy to change based off your feedback. The initial test came back with great reviews.

"**We need an online course for additional duty safety officers**. **The Commander's Safety Course won't cut it**!" The Safety Center agrees. A new course focused on NCOs, also modular, will be available online later this month.

"**Driver's training is weak**." The Army Safety Coordinating Panel, made up of Army senior leadership and Major Command representatives, is tackling this issue head-on. A new task force is headed your way to quickly beef up both tactical and POV driving skills.

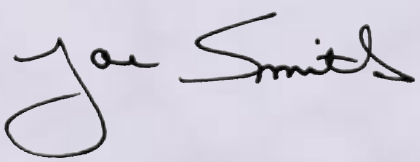
"**Negligent discharges: There are too many different standards for weapons clearing**." Sergeant Major of the Army Kenneth O. Preston recently attacked this issue to clarify clearing procedures. The July 2004 *Countermeasure* included an insert that covers all currently issued U.S. Army weapons. You can download the pamphlet from our Web site at **https://safety.army.mil/pages/media/pubs/cm/safeweaponpullout.pdf**.

"**Aircrew coordination training needs improvement**." Since 1997, 50 percent of all aviation accidents have had some causal factors associated with crew coordination. The new Aircrew Coordination Training Enhancement Program is on the street and being taught by the Directorate of Evaluation and Standardization. Aviation units—if you're not scheduled yet, ask for assistance!

"**Risk management training needs to be reviewed from the bottom up**." TRADOC will publish a new version of Field Manual 100-14 in Third Quarter 2005. By the way, all three modules of the Army Safety Management Information System risk management tool are now on our Web site. The POV version has been out the longest and with much success. To date, we've had over 120,000 assessments completed with only one POV fatality. Putting risk management in Soldiers' faces works!

There are lots of other ongoing initiatives to move us toward predictive analysis of accidents. Until then, my message is simple: Managing composite risk will move 'ya to the edge to get the tough jobs done, and now there are plenty of tools available to get after it.

Get the job done and bring 'em all back home!



COVER STORY

FY04 Aviation Safety Wrap-up

Charisse Lyle
U.S. Army Safety Center

It's time to assess how Army Aviation did in fiscal year (FY) 2004. Overall, we experienced 103 aviation Class A through C accidents, costing the Army more than $131 million. Engine overspeeds and overtemps were the most common events in these accident categories, followed by tree strikes. According to the accident reports so far, 41 percent occurred in Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF). That's a disturbing trend considering some delayed reporting will make that number go even higher. There were 26 Class A aviation accidents, slightly better than 29 last year. The FY04 Class A accident rate also was lower than in FY03 (2.4 versus 2.7 flight accidents per 100,000 flying hours, respectively).

A total of 12 Soldiers died in FY04 in comparison to last year's 34 aviation fatalities. Two of the fatal accidents involved wire strikes, two were inadvertent instrument meteorological conditions (IIMC) mishaps, and one was the result of abrupt maneuvers that caused unsecured equipment to jam the flight controls.

A total of seven aviation fatalities and 81 percent of the Class A accidents occurred in OEF and OIF. Crew coordination errors, poor mission planning, and failures to adhere to standards were manifested in wire strikes and brownout-related accidents. There were four wire strikes, two Class As and two Class Cs, all occurring in Iraq. Of the brownout-related accidents, 86 percent occurred in theater and 83 percent involved multi-ship operations. The environmental conditions directly contributed to loss of aircraft control during takeoff or landing, hard landings, or collisions with unseen hazards in the landing zone (LZ).

Airframes

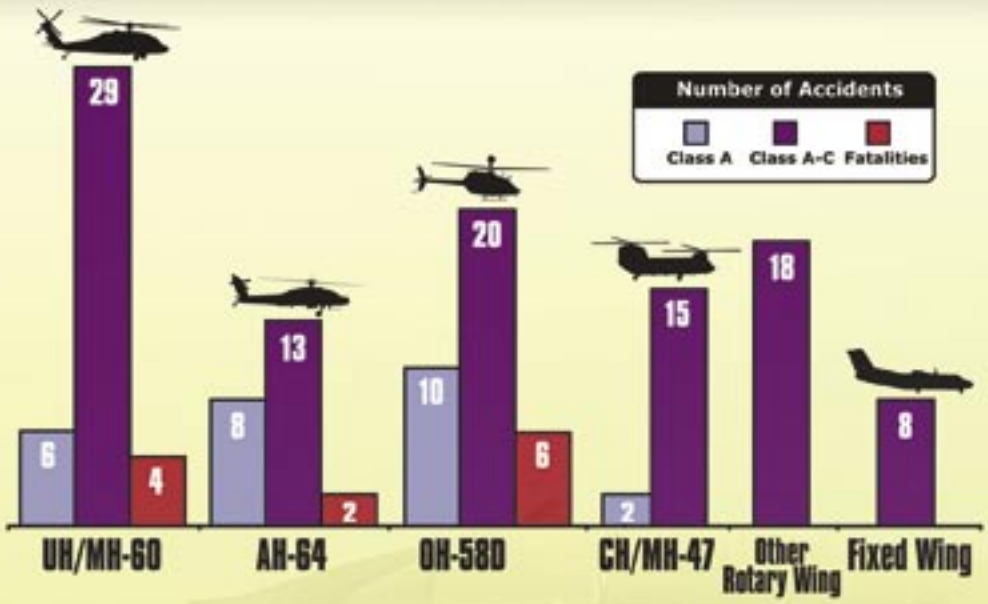
The chart on the next page depicts the accident number breakdown by accident class for each aircraft type.

UH/MH-60 Black Hawk— (28 percent)

The Black Hawk accounted for 29 Class A through C accidents, more than any other airframe, claiming the lives of four aircrew members. IIMC was a contributing factor in two accidents and three crewmembers' death. The fourth fatality occurred when a UH-60L pilot executed an abrupt cyclic maneuver that caused unsecured equipment to jam

FY04 Aviation Accidents

(Flight, Flight-Related & Aircraft-Ground)



the flight controls.

In three accidents, the main rotor blades struck the AN/ALQ-144 or tail rotor driveshaft because of a hard landing or excessive aft cyclic inputs while landing. Four engine hot starts were reported and caused Class C damage. There was also one Class C wire strike that involved a UH-60.

OH-58D Kiowa Warrior—(19 percent)

Twenty accidents occurred in the OH-58D, causing six fatalities. The loss of two OH-58Ds and the deaths of four Soldiers were attributed to poor planning and failure to conduct an adequate composite risk assessment. There were three wire strikes in Iraq, two Class As and one Class C, claiming the lives of four crewmembers. In two of these accidents, the crew was flying over a river. Two of the wire strikes occurred at night and one during the day. In the day accident, solar glare possibly degraded the pilots' ability to detect the cable. In all of these cases, the crews failed to combine the risks associated with the combat operations with the environmental hazards of terrain flight.

In another incident, while conducting a two-ship NVG mission during OIF, the crew encountered fog over an area of low contrast on a dark night. The crew failed to properly execute the IIMC procedures, became disoriented, and lost control of the aircraft, causing it to impact the ground at a high rate of descent. Both crewmembers were killed.

Four accidents were caused by definite or suspected engine failures. A Full Authority Digital Electronic Control (FADEC) failure is suspected to have caused one of the accidents. Another Class A accident occurred due to a pilot-induced rotor droop due to the aggressiveness of the maneuver, coupled with the environmental conditions and aircraft configuration. The aircraft was destroyed and the crew suffered fatal injuries. In another Class A (OIF), the tail rotor contacted the ground during a firing mission while at an in-ground effect hover.

AH-64 Apache—(13 percent)

The Apache had eight Class A, three Class B, and two Class C accidents. In one fatal accident, both pilots fixated on a passing aircraft. While both pilots were flying with the helmet-mounted display unit, voice data showed they were more concerned about why the passing aircraft was flying so high rather than noticing that their aircraft was too low. Consequently, their aircraft continued to descend into 90-foot trees.

Auxiliary power unit (APU) clutch failures caused in-flight fires and Class A damage in three

aircraft. The crews of all three received warning light indications and were able to execute a controlled landing and egress without injury. As a result of the APU failures, the Apache Project Manager released Safety of Flight Message AH-64-04-01, established new maintenance procedures to resolve the problem, and developed a more reliable clutch. For more information, see the cover story in the May 2004 *Flightfax*, "APU Clutch Failures Cause Damage in Apaches."

CH/MH-47 Chinook—(15 percent)

Chinooks had two Class A, four Class B, and nine Class C accidents. There were no CH/MH-47 fatalities. Four of the Class A through C accidents occurred in theater during OEF- and OIF-related operations, including two Chinook brownout accidents. In one Class A, three CH-47 aircraft were in free cruise formation when they entered a dust storm. As the flight slowed, Chalk 2 was forced to rapidly maneuver out of the formation. Chalk 2 descended and attempted to land while the other two aircraft initiated IIMC breakup procedures. The pilot of Chalk 2 lost visual reference with the ground due to brownout but elected to continue the approach. The aircraft drifted to the right and impacted the ground, causing extensive damage.

Another Class A accident ended in extensive aircraft damage and minor aircrew injuries. The pilot initiated an aggressive deceleration from 60 knots and, prior to dissipating sufficient forward airspeed, initiated an aggressive left turn to reverse course. As the aircraft turned through 180 degrees while descending, the pilot attempted to arrest the turn and descent without success. The rapid decelerating turn and subsequent downwind condition caused the aircraft to enter aerodynamic settling with power. The pilot's flight control inputs exacerbated the situation, and there was insufficient altitude to recover.

There were two Class Cs involving loss of a CH-47D door in flight. In both cases, the door did not strike the aircraft after it separated. Aviation Safety Action Message CH-47-96-ASAM-09 addresses the potential for failure of the aft pylon clamshell doors and provides inspection and repair procedures.

Fixed wing—(8 percent)

There were four Class B and four Class C fixed-wing accidents. Four of the accidents involved C-12 and C-35 engine overspeeds, and two were in-flight lightning strikes. Another accident occurred when an aircraft struck a deer that darted across the runway during landing. The final accident involved a tire blowout caused by a hard landing.

Summary and recommendations

The Army lost five people and two aircraft to IIMC accidents in FY04. Brownout and whiteout contributed to nine accidents. Many missions are conducted at night when terrain is often of low contrast and little definition; some flight crews find themselves in instrument flight conditions even though there are no clouds. The Army Aviation Center Directorate of Evaluation and Standardization (DES) identified poor training in degraded environmental conditions as a problem across the Army. There are basic crew and pre-mission planning actions common to all of these circumstances. Accidents occur when crewmembers are not prepared to transition to heads-up displays (HUDs) or instruments when encountering extreme environmental conditions. Ensure all flight crews are proficient in instrument flight procedures before arriving in theater.

Effective crew coordination training is essential. Every crewmember must stay actively engaged in identifying hazardous conditions. Mission planning for every flight must include pre-planned crew coordination elements. Aircrews conducting missions involving known high workload conditions, such as brownout landings, should discuss and clearly delineate each crewmember's responsibility before the flight.

Aviation units should use the AN/AVS-7 HUD with NVGs whenever possible. The additional information the HUD provides can improve overall flight crew situational awareness during limited visibility conditions. Commanders must ensure crews are trained effectively on the system using a crawl-walk-run methodology included in the unit training plan. ♦

Editor's note: These statistics are current from the Safety Center database as of 3 November 2004. Delayed reports and follow-up details on preliminary reports could change the statistics, figures, and findings.

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Investigators' Forum

Written by accident investigators to provide major lessons learned from recent centralized accident investigations.

RSOI— The Importance of Proper Integration

MAJ Steven Van Riper
U.S. Army Safety Center

With increased mission tempo and ever-changing operational environments, reception, staging, onward movement, and integration (RSO&I) operations become a vital link to ensuring units are set up for mission success. In particular is the last and most crucial phase: integration.

The flight of three CH-47Ds, based at Logistics Support Area Anaconda (Balad, Iraq), headed southeast in a free cruise formation at approximately 130 knots and with an altitude of 300 feet above ground level (AGL). Approximately 1 hour into the mission, the flight encountered blowing sand, which led to a rapid decrease in visibility. Chalk 1 announced to the flight that he was slowing to 90 knots. Chalk 3 acknowledged the speed change, but Chalk 2 did not. As the flight began to slow, Chalk 2 began to overtake and overfly Chalk 1. Chalk 2 executed a right turn. The pilot on the controls lost sight of Chalk 1 during the turn, so the pilot in command (PC) took the controls. As a result of the right turn and an inadvertent climb, Chalk 2 was now at 600 feet AGL. At the same time, the flight engineers and crew chief lost visual contact with the ground and other aircraft in the flight. The PC stabilized the aircraft and descended to 200 feet AGL. As the visibility continued to decrease the PC, who still had visibility with the ground, decided to land and wait until the weather passed. Chalks 1 and 3 initiated inadvertent instrument meteorological conditions (IIMC) break-up procedures and recovered to their base airfield without incident.

At approximately 50 feet AGL, with near zero airspeed, Chalk 2 became enveloped in a dust cloud. Although the PC had no visual contact with the ground, he chose not to apply sufficient power to execute a go-around and continued for landing. The aft right landing gear struck the ground and was torn from its mounting points. The initial impact caused the aircraft to rebound upward and to drift to the rear. The aircraft struck the ground a second time within the right aft quadrant of the fuselage, in the vicinity of the ramp. The aircraft then began to roll to the right until coming to rest on its right side. The crew suffered minor injuries, however the aircraft was destroyed.

Lessons learned

The accident investigation revealed the aircrew did not receive adequate environmental training upon arrival in theater, nor did they complete the integration phase of RSO&I as outlined in the theater's Helicopter Procedures Guide (HPG).

Proper application of integration principles provides the commander with a better understanding of a specific unit's capabilities and limitations. A subordinate unit's capabilities and limitations must be known to the commander so he or she can effectively identify, assess, and control risks arising from operational factors and make decisions that

balance risk cost with mission benefits (Field Manual (FM) 100-14, *Risk Management*, Chapter 1).

The integration phase is the synchronized transfer of authority over units and forces to a designated component or functional commander for employment in the theater of operations (FM 100-17-3, *Reception, Staging, Onward Movement, and Integration (RSO&I)*, Chapter 6). There are two prerequisites for unit integration:

1. The unit must become operation and mission ready. It must be able to move, fight, and communicate at nominal levels of capability.
2. The unit must be absorbed into the joint force and be able to communicate and receive command and control from its higher headquarters (FM 100-17-3, paragraph 6-2).

When developing the commander's integration plan, the staff must provide realistic options that take into account mission tempo, the tactical situation, available time, and the operating environment. Some tactical situations may demand immediate employment of assets. In these cases, commanders may have to accept the risk incurred by the lack of formal mission and environmental training. Proposed courses of action (COAs) should include quantifiable metrics that enable the commander to track the unit's integration progress.

Examples of quantifiable metrics include status of right seat and left seat rides, academic training progress, and any number of administrative actions ranging from aircraft status reports to personnel availability. The CJTF-7 HPG spells out requirements for aircrews:

"After arrival in CJTF-7 AOR, during unit integration training, all aircrews must demonstrate flight proficiency in the following tasks: single and multi-ship VMC takeoffs, VMC approaches, low-level flight, IMC recovery procedures, and hovering flight. For newly integrating units, commanders must conduct day flight rehearsals prior to conducting multi-ship NVD missions. Commanders are not limited to these required tasks and will identify and train on tasks essential to the accomplishment of their mission prior to commencing normal operations. In addition to environmental training, CJTF-7 aircrews are to undergo the following integration tasks as determined by their particular airframe…" (CJTF-7 HPG, paragraphs 6-8).

The unit's progress during the integration process provides the commander with invaluable information. This information provides the foundation for decisions involving the unit's employment timeline, sustainability, and supportability.

The unit had been in theater only 6 days. The mission tempo was extremely high when the accident unit arrived in theater. Nearly all available CH-47Ds were required every night to complete combat and combat support missions. This constant requirement for mission crews and aircraft generation did not allow the unit to complete RSO&I, specifically integration, in accordance with FM 100-17-3 and the CJTF-7 HPG. The unit did not receive any task force-sponsored integration. The aviation task force commander did not ensure the incoming unit was fully familiarized with command organization, mission, duties and responsibilities, terrain, and logistical support. The company commander charged with performing the integration task for the new unit did not follow a structured integration plan and did not provide the task force commander with any status reports. Most notable is the lack of mission integration. Although the unit did participate in the minimum required integration training at Udairi Airfield, the task force commander did not ensure time was allotted for orientation flights, additional environmental training, and mission-specific training. According to individual records, none of the non-rated crewmembers received any documented orientation flights at Udairi Airfield or in theater. The lack of structured integration resulted in the unit conducting on-the-job training while performing missions. In tactical situations demanding immediate employment of assets, commanders may have to accept the risk incurred by the lack of formal mission and environmental training. Given this set of circumstances, time—although minimal—was available to conduct a structured integration plan.

Conclusions

Leaders who successfully integrate units within their command will employ those units at their maximum potential while applying the principles of risk management. Staffs must provide commanders with realistic integration options based on the tactical situation and operational environment. A structured and relevant integration process ensures commanders will have the ability to assess, manage, and mitigate risk while the unit becomes mission ready. ♦

—MAJ Van Riper is the Chief of Attack/Scout Branch, Investigation Division, U.S. Army Safety Center. He can be reached by calling DSN 558-2131 (334-255-2131) or via e-mail at steven.vanriper@safetycenter.army.mil.

Investigators' Forum

Written by accident investigators to provide major lessons learned from recent centralized accident investigations.

Good Crew *Mix* Essential for Mission Success

Too many times people undertake tasks they don't fully understand or for which they are not prepared. This includes aircraft crews. It is not uncommon to have two aviators flying an aircraft in which they have only a few hundred hours between them. Such crew mixes bring on a whole new challenge in the arena of crew coordination.

The mission was a "routine flight" for aircrew training manual (ATM) proficiency at night in the local training area. The crew of the AH-64 reported to work in the afternoon to meet the requirements for crew rest to fly the night mission. They preflighted the aircraft, did the performance planning during the afternoon, got the company commander's approval on the risk assessment, and then returned to the aircraft at about 2030 local. Since this was ATM training the crew calculated the risk assessment as low, when in fact it was a medium-risk mission. The company commander did not correct this mistake.

The pilot in command (PC) was selected as a PC a couple of months earlier and had moved from flying in the front seat to flying in the back seat. He had less than 500 hours total flight time. The pilot (PI) graduated from flight school about 8 months earlier and had not flown with anyone other than an instructor pilot (IP). He had just over 200 hours of total flight time.

The crew proceeded to the local flying area and began their ATM training. Shortly before 2 hours of flight time had passed, the PC decided it was time to return to the airfield. Before they departed the training area, the PI asked the PC questions about cooperative rocket firing, in which the PC had difficulty explaining the procedure. He told the PI to wait until they returned to base and he would get out the books and go over the procedure.

While on the controls, the PC made a radio call and the aircraft took off to the north to intercept the flight route off the range. The controlling agency told the crew there would be a CH-47 transitioning along the route as their only traffic. The PC responded that they would follow the CH-47 off the range.

As the aircraft proceeded north, the PC overflew the route and became disoriented. When he determined his position, he continued north and overflew the northern route, crossing in front of an MH-47 that was transitioning onto the range. The PC became confused and thought the MH-47 was the CH-47 he was supposed to be following. The route altitude was 500 feet and the aircraft was at 700 feet, so the PI told the PC to check altitude. The PC began a slow descent and turned east.

The crew continued to watch the MH-47, which they thought was the CH-47 going in the wrong direction. Unfortunately, both pilots

watched the MH-47 for almost a minute and a half, never recognizing that their aircraft was descending. Suddenly, the AH-64 struck treetops approximately 75 feet above ground level and tore off the target acquisition designation system, pilot night vision system, the left missile and rail, and part of the left wing.

The PC increased the power to above maximum power available and began a cyclic climb. At about 600 feet the PI told the PC, "Low rotor!" The PC continued to climb with power above maximum power available, and the rotor RPM continued to decay. At approximately 1,000 feet the aircraft began to spin to the right and descend. The PC did not seem to be aware of his power available, which he had predicted before the mission, and the affect it would have on the engines and tail rotor effectiveness if he continued to pull more power than was available. The aircraft continued to spin as it descended because the PC continued to hold the collective in the full-up position. The PC thought he had a tail rotor malfunction, so he told the PI to chop the engines. The PI never found the button to chop the engines. At this point, the rotor RPM had decayed beyond the point where the crew could have brought it back to a normal operating RPM. At about 200 feet the electrical power was lost due to the low rotor RPM, and the aircraft crashed in a marshy wooded area. Both pilots suffered fatal injuries.

The aircraft continued to spin as it descended because the PC continued to hold the collective in the full-up position. The PC thought he had a tail rotor malfunction, so he told the PI to chop the engines. The investigation determined the crew did not have enough emergency procedure training to recognize that this was not a tail rotor malfunction.

Lessons learned

■ **Poor cockpit coordination and instrument scan**. The crew became so fixated on the MH-47's actions that they failed to perform the required crew coordination, as well as cross-check their altitude or airspeed, their helmet-mounted display unit, or the aircraft night vision system. The crew lost situational awareness when the aircraft night vision systems were knocked out, and neither crewmember properly transitioned to night unaided flight.

■ **Poor crew selection**. The PC delayed initiating any emergency procedures because of his lack of experience and lack of knowledge of emergency procedures. The investigation determined that had he or the PI been flying with a more experienced pilot, the aircraft may not have been allowed to descend into the treetops and, if it had struck the trees, a more experienced pilot would not have overcorrected with excessive power inputs.

■ **Inadequate training**. Despite the gravity of the situation, the crew should have realized that the first thing required in either a tail rotor malfunction or loss of engine power is to lower the collective (reduce power) to regain rotor RPM and decrease torque requirements. Neither crewmember reacted to the first emergency—the tree strike—properly and flew the aircraft into an uncontrollable situation. Both crewmembers displayed a lack of emergency procedure and power management training.

Commentary

Although it did not contribute to the accident, the investigation found that the PC was not wearing his shoulder harness properly. The harness was worn so loosely that it allowed him to hit the instrument console during the crash.

Both pilots' helmets were damaged. The PC's helmet came off during the crash. His helmet was too large, and the fitting pads he had installed to make it fit possibly contributed to the helmet coming off. The PI's helmet had a hole punched through the visor and the helmet, and the PC's helmet was broken just above the right ear cup protrusion.

Was this accident caused by hitting treetops, or after everything is said and done, did the accident occur because these two pilots were not a good crew mix? ♦

—Comments regarding this article may be directed to the U.S. Army Safety Center Accident Investigation Division at DSN 558-9552/3410 (334-255-9552/3410).

WAR Stories

There I was...

CW4(P) Montie Vanlandingham
CAARNG
Mather, CA

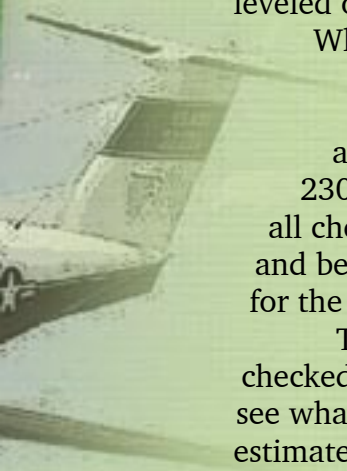
KNOW YOUR CREW LIMITS

The mission took place on a beautiful California morning after several weeks of coordination between military and federal agencies. As pilot in command (PC) of my National Guard detachment's C-12T2, I was to transport key military and civilian personnel, including The Adjutant General (TAG), to California's southern borders. From there we were to link up with UH-60s for aerial transport along the California and Mexico border.

After pre-flight, I rechecked all the required flight information I would need, such as NOTAMs, flight plans, and performance planning and reviews (PPRs). The weather along our route of flight was perfect—except for the 98-degree heat—and after weeks of coordination it looked as though the mission would go off without a hitch.

My copilot just completed the fixed-wing multi-engine qualification course and readiness level (RL) progression within the unit. As the unit instructor pilot, I was to provide him with additional training on the performance of operational missions. Unlike most individuals who have just completed a qualification course or RL progression, my co-pilot was a highly decorated and seasoned Army Aviator. His experience had begun in early 1968 in the jungles of Vietnam flying OH-6s, and since then he had flown almost any mission imaginable in countless types of aircraft. Before flying C-12s we both had flown together in the Reconnaissance and Interdiction Detachment (RAID) program, where I found him to be a highly professional, respected pilot and friend. Today was our first flight together in many years, and we both were looking forward to it.

After the passengers were briefed and last-minute coordination was completed with staff personnel, we



departed for our destination. My copilot was at the controls. Following air traffic control (ATC) instructions, we climbed to 14,000 feet and leveled off at 17,000. While waiting for clearance to our final altitude of FL 230, we rechecked all checklist items and began settling in for the 1½-hour flight. The TAG checked with me to see what our updated estimated time of arrival would be at our first destination, since our timeline was critical. At the same time, ATC cleared our aircraft to FL 230. My copilot acknowledged the call, and I gave him the thumbs-up to begin the necessary climb and turned back to the TAG. After about 90 seconds I turned around and instinctively focused on the instruments. I immediately saw the letter "E" preceding the numerical readout, which indicated an inlet turbine temperature (ITT) exceedance and gas turbine speed (N_1) overspeed on the right engine. I quickly reached up to pull the power levers back and bring the engines within normal operating limits. My action startled the copilot, who immediately began looking over the instruments to find the problem. He still wasn't able to locate the problem after several moments, so I explained it to him.

The Engine Trend Monitoring System showed a recorded ITT exceedance of 93 seconds, approximately the same time I was focused outside the cockpit and on the passengers! After reviewing the emergency procedures and the aircraft operator's manual, we decided to take the safest course of action and return to home base from our current location. The operator's manual and checklist are vague on the appropriate course of action during this situation. We informed ATC of our intentions, and I briefed the passengers on the situation. We made it back to home base without further incident.

After 19 years in Army Aviation, it never ceases to amaze me how things can go wrong in just a matter of seconds. We were fortunate that no injuries or deaths occurred in this incident. After an in-depth debriefing of the events that occurred, the investigation brought forth several key issues. The co-pilot was unaware of the need to reduce power during a rapid climb when a high power setting was already applied. Once the aircraft was placed into a steep climb profile—therefore reducing the amount of air for appropriate cooling—the ITT temperature rose above critical operating limits and a subsequent N_1 overspeed occurred. This is more of a concern during seasonal high temperatures, regardless of altitude. This lack of knowledge, along with inappropriate scanning of the flight instruments, helped lead to the problem. The copilot also wasn't aware of certain instrument functions—a problem that could have been resolved during initial aircraft flight qualification. However, current Army contract simulator training facilities do not have these types of simulators available.

This factor I believe to be the most important: I was the PC, and my attention was diverted outside the cockpit. I was overconfident in the copilot's abilities to recognize not only the exceedance readings on the instruments, but also the aerodynamic factors that cause them. Our casual attitude in the cockpit due to the decreased workload also contributed to the incident.

As responsible and professional crewmembers, we must always be cognizant of other crewmember's abilities and limitations, as well as our own. This, along with continual training and reinforcement of the basics of crew coordination, will lead to safe and successful missions in the future. ♦

—CW4(P) Montie Vanlandingham is the Commander of Detachment 32, OSA, CAARNG, Mather, CA. He may be reached by calling DSN 466-3980 (916-843-3980) or via e-mail at montie.vanlandingham@js.ca.ngb.army.mil.

Thanks to CW2 Stephen Isle of the CAARNG who worked to get this article published.

WAR Stories

There I was...

The weather SUCKED!

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Camp Murray, WA
WAARNG

It was 1986 and there I was … a brand new WO1 just out of flight school having a ball on my first flight without an instructor pilot (IP). I was stationed in Germany to a corps asset company, which meant we completed a variety of missions—air assaults, long-range patrol, and general support. It was a great place to learn as a "Wobbly One."

I had just been signed off as Readiness Level 2, and one of the more gung-ho unit trainers wanted to go on a Friday instrument flight rules (IFR) training mission. We took off IFR from Schwabish Hall and headed north to a German army base to refuel and return to IFR. On the way to refuel we noticed the automatic direction finder (ADF) was inoperative, but we didn't think it was an issue since we were in and out of the clouds during the flight.

When we landed at the base, a German weather briefer told us the weather would turn bad going south, but not for at least 4 hours. Since we needed an ADF to complete any approach into Schwabish Hall due to the missed approach procedures, my pilot in command (PC) called and got the OK to return visual flight rules (VFR).

It was getting late as we departed for home and the weather was not exactly as the weather briefer briefed us. I noticed the mounting tension in my PC's voice. When I asked him why he was so tense, he responded that the weather sucked, which meant we didn't have the option of going IFR; it was getting late, it was getting dark, we were low on fuel, and did I mention the weather sucked?

I may have been a "Wobbly One," but I was smart enough to know the PC was getting in a little over his head … and I was unable to help him! I had been out of the traffic pattern only twice at Schwabish Hall,

and the European maps didn't make much sense to me yet.

On the return trip, I was flying and the PC was navigating. It soon became dark and the weather got worse. The PC, trying to read the map in a dark cockpit and navigate in bad weather, detected the autobahn ahead. He suddenly realized where we were and took the controls and gave me the map.

Things got worse. The weather deteriorated when we crossed the autobahn and we were down to about 450 pounds of fuel. Then, out of nowhere, four very large electrical lines appeared in front of our windscreen. The PC pulled the collective up, and I lost sight of the cars on the autobahn. I figured we were going inadvertent instrument meteorological conditions (IIMC). We made it over the wires and came back down through the mist until we could see the cars again.

We flew down the autobahn another 250 feet until the next off ramp and landed inside the cloverleaf. By this time rain was POURING down! During the landing, the PC's windows fogged up because the heater quit. I could still see out the window on my side, so the PC gave me the controls. We landed safely without incident soon after the rain let up. I was pretty happy to be on the ground and thought we should just stay there, but then again I was a WO1. The PC determined we were only 25 miles from home and thought we could make it since the weather cleared.

We took off toward home with the PC on the flight controls and me on the map. We hadn't been in the air long and were at about 15 feet above ground level when telephone wires appeared ahead of us. At first the PC didn't see the wires, and I was about to take the flight controls and pull the collective for all I was worth. However, he saw the wires in time and averted disaster. The PC decided to follow the wires to a small town, where we landed in a farmer's backyard. We called operations from the farmer's phone and told them we would have to wait until the next day to come home. Since we were so close to the base, the first sergeant sent us some sleeping bags and MREs. Sleeping in the Black Hawk on an extremely cold night in the pouring rain was miserable. Looking back, it was better than being in a never-ending sleep!

That night my Army Aviation career almost ended before it even started because we "had to get home." Don't fall into the same trap. Play it safe when it comes to bad weather. The alternative to being delayed is never making it home. ♦

—CW4 McIntyre may be reached by calling (360) 438-8458 or via e-mail at edward.mcintyre@us.army.mil.

2005 Gunnery Conference 25-28 January

All Active/National Guard/Reserve unit commanders, master gunners, and standardization pilots are tentatively invited (pending formal approval) to the 2005 Gunnery Conference. Conference dates are 25-28 January 2005 at Murphy Hall, Bldg. 5206, Minuteman Avenue, Fort Rucker, AL. TDY is at unit's expense. Formal invitations will follow.

—For more information, contact CW4 Mike Wells, DOTD-Gunnery Branch, U.S. Army Aviation Center, DSN 558-2621 (334-255-2621), e-mail michael.wells@rucker.army.mil.

Smoke in the Cockpit

CW4 Rick Williams and
CW4 Kerry Lambert
Fort Rucker, AL

The oxygen system in a fixed-wing aircraft is hardly—if ever—used in flight. The pressurization system maintains the aircraft cabin at a comfortable altitude. The oxygen system is reserved for certain emergency situations, including smoke or fumes in the cockpit. Let me tell you about one of those situations . . .

We were to depart Cairns Army Airfield, Fort Rucker, AL, on a cross-country flight to San Antonio, TX, in a C-12D1. The weather at the departure and destination airports was perfect; however, the en-route weather was a different story. There were significant meteorological information (SIGMENTs) and airman's meteorological information (AIRMETs) galore for low ceilings in Louisiana and lines of thunderstorms along the entire Gulf Coast. Since the destination weather was good, no alternate route was required. But we had asked maintenance to have the plane "topped off" with fuel the previous day just in case we had to deviate around the storms.

When we arrived that morning for preflight, the airplane had only a standard fuel load, leaving us with only about 4.5 hours of fuel for a planned 3-hour flight. If we'd had a full fuel load, it would've given us over 5 hours of flight time and a lot more room for the expected deviations around the thunderstorms. The preflight was fine, except for one write-up on the air conditioning (a/c). There was a problem with the associated vent blower, and the operation of the a/c was restricted to in-flight use only. Fortunately, it was pretty early in the morning and the temperatures were still

cool, so not having the a/c on the ground was not excessively unpleasant.

It was just our luck that morning that our departure time coincided with the Initial Entry Rotary Wing launch period, which is an exodus of assorted aircraft (mostly orange and white TH-67 helicopters) all trying to take off at the same time from Cairns. This led to a 30-minute delay while holding short of the runway with both engines running, waiting in line for our turn to take off. This cut our extra fuel even more, but we still had an hour of reserve fuel. We also were wishing that we could use the a/c on the ground now. Once we got into the air, we immediately "cranked up" the a/c and started getting comfortable.

We entered the area of low ceilings, poor visibility, and developing thunderstorms about 30 or 45 minutes later. At FL 240 it wasn't much of a problem, but we soon could see that we would have to deviate north of our planned route to avoid the lines of thunderstorms that were already building. As our deviation requirements increased, our extra fuel decreased. We knew now that a fuel stop in Louisiana would be wise. We started listening to the Automatic Terminal Information Service for the nearby airfields. Everyone was down to around 300-foot ceilings and visibility under a mile. We settled on Lakefront (KNEW) because they had contract fuel and were above minimums for the instrument landing system (ILS). During the descent and approach into KNEW, we thought we smelled something burning—something electrical, but we attributed this to pollution sources around the airport. Eventually the smell in the cabin dissipated, or we otherwise became used to it. Nevertheless, we made an oath to check it out while we were on the ground.

The approach and landing at KNEW were uneventful, and we picked up the runway about a mile out on the ILS. The ground checkout revealed no apparent electrical problems, so we dismissed the earlier smell, cranked up our now nearly-full-of-fuel airplane, and departed.

Not 5 minutes after departure, we were approaching 10,000 feet mean sea level when the smell returned—this time in the form of billowing white smoke coming out of the a/c vents. We were in denial; how could this be? The pilot in command (PC), who was in the right seat performing the non-flying pilot duties, shouted in sheer disbelief, "Crap! We've got smoke and fumes in the cockpit!" What he had stated was the exact name of the emergency procedure in the operator's manual that we were about to do. I was hand-flying the airplane and realized very quickly why hand-flying is a bad idea in an emergency. I couldn't let go of the controls to put on my oxygen mask! The airplane was trimmed for a 155 knots indicated airspeed climb with the power near 100 percent. If I let go of the yoke with both hands, even for a minute, the nose might rise and the airspeed would probably decay, possibly to near stall, and certainly slower than normal flying speed for a fixed-wing aircraft.

The pilot in command, who was in the right seat performing the non-flying pilot duties, shouted in sheer disbelief, "Crap! We've got smoke and fumes in the cockpit!"

In the meantime the PC was busy. He had donned his oxygen mask, changed his microphone switch so he could talk, gone through the checklist for the emergency procedure, and declared an emergency with air traffic control (ATC). I had managed, with his help, to get my mask off the hook behind my seat and hold it to my face with my right hand and fly the airplane with my left. I couldn't use my right hand to reduce the power and start a descent because I would have to drop the mask, which was out of the question since the cockpit was engulfed in the acrid smell of electrical fire. The mask was the quick-donning Emergency Respiratory Oxygen System type with the inflatable headband. All I had to do was squeeze two small levers and the headband would inflate large enough for my head to fit

through. In theory, it works fine with your headset off. But with a headset, sunglasses, and smoke in the cockpit, I couldn't get that thing to open up large enough to fit my head into and at the same time fly a multi-engine turboprop airplane. Nor could I reach up and switch my microphone over to OXYGEN MASK so I could tell the PC about my little problem.

I shouted several times, but the PC was busy coordinating with ATC for an emergency landing at New Orleans International (KMSY). Eventually he heard me and took the controls. Finally, I could put my mask on properly and I didn't have to "eat smoke" anymore. Plus I could change my microphone switch so I could communicate. Within a minute or two, I was able to take the controls back and fly an ILS to minimums at KMSY for an uneventful landing. If you haven't worn an oxygen mask before, and I hadn't, the worst time is during a real emergency. The smoke began clearing after the PC "dumped" the cabin, but the aroma remained long after we landed.

(Editor's note: For clarification, "dumped" refers to a switch on the cabin pressurization control.)

You may never need to use the oxygen system in your airplane, but then again you might. Don't wait until you see smoke in the cockpit to learn how to use the system. Preflight, practice, and plan—then you'll be better prepared for an emergency.

Lessons learned

■ Preflight the oxygen system thoroughly. Make a commitment to always check the microphones in the oxygen masks during preflight. I failed to check the microphones that morning, even though it used to be a part of my preflight. Had the microphones in the masks not worked, the situation would've been even more difficult. Putting the oxygen mask on in an emergency is not the time to discover the microphone is broken.

■ Practice quick-donning the oxygen mask during training. Determine if the style of mask will require you to remove your headset. Practice using the microphone in the mask so you'll be familiar with the switch location and how it sounds with oxygen flowing into the mask.

■ If you suspect a mechanical problem like when we first smelled the smoke, try to determine the cause and get it taken care of by maintenance before flying the aircraft again. The range of fixed-wing aircraft takes you far away from your support base; too often fixed-wing pilots think they have only themselves to rely on when unexpected events occur. Both the PC and I had personal cell phones. Once we landed at Lakefront, we should've called back to maintenance for advice. They probably would've told us not to run the a/c because it was the failure of the motor in the associated vent blower that caused the smoke in the cockpit.

■ Don't forget the passengers. Smoke or fumes do not automatically activate the passengers' masks. Most airplanes require some type of crew action to manually activate oxygen flow to the passengers. In our case we had no passengers, but if you do, don't forget to activate their supplemental oxygen after the crew completes donning their masks.

■ Have a course of action ready for any takeoff emergencies. As part of your departure briefing, discuss an emergency return plan. If the weather is instrument meteorological conditions, have an approach plate ready to go to your emergency return airfield. In our case we had discussed returning to the Lakefront airport if an emergency occurred during takeoff. ATC threw us a curve when they gave us vectors to the other New Orleans airport.

You may never need to use the oxygen system in your airplane, but then again you might. Don't wait until you see smoke in the cockpit to learn how to use the system. Preflight, practice, and plan—then you'll be better prepared for an emergency. ♦

—CW4 Lambert and CW4 Williams may be reached at DSN 558-2453 (334-255-2453).

Don't Ever Do That To My Airplane Again!

Many years ago, before I got into the airline business, I was building time as a Part 135 freight pilot. I was mostly flying multiengine Rockwell Aero Commanders in a single-pilot operation. An opportunity came for me to interview for a better position with a company owned by a TWA captain. He invited me to St. Louis, MO, for an interview, and part of the interview would include a flight with him in his multiengine Beechcraft.

All went well in the personal interview, as the owner seemed impressed that I was an Army Aviator and Army instructor pilot. He even stated that I demonstrated a professional bearing. We then proceeded to the airport for the flight interview. I demonstrated a thorough exterior preflight and flight deck inspection. After I was satisfied with the comfort level in the flight deck, we cleared the props and started the engines. I did the required engine checks and got a clearance.

I was in the rotation, lifting off the runway, when the owner reached over and pulled the left engine to idle, simulating an engine failure. I handled the emergency situation with stellar success and climbed to the en route altitude. At the en route altitude, I announced that I would attempt a restart. The owner said, "OK!" But it didn't restart. That was my cue to proceed to the instrument landing system (ILS) and land with one engine inoperative.

I nailed the ILS, keeping the flight director needles perfectly centered. As the airplane approached 300 feet above the airport, the owner told me that I now had power available in the left engine and was cleared to circle to another runway. I did the circling maneuver and found myself a little high on the visual aid, which was a visual approach slope indicator (VASI). I put the airplane into a slip to lose the altitude. I then felt pressure on the rudder, taking the slip out. The owner looked over at me and stated, "We'll talk on the ground, but don't slip my airplane!" I landed the airplane and taxied to the hangar without a word from my evaluator. I knew from the tone that my stellar performance had gone down the proverbial toilet.

Once the engines were shut down and the battery turned off, the airplane's owner exclaimed, "Don't ever do that in my airplane again! Slipping a multiengine airplane is poor airmanship!" He then went into a lesson in multiengine aerodynamics, explaining why slipping a multiengine airplane is poor airmanship.

The owner, an experienced captain in many different airframes, explained that slipping a multiengine airplane causes cavitations in any fluid-dependent systems. This could possibly cause an engine failure from fuel starvation or a hydraulic pump failure from hydraulic fluid foaming. He then pointed out that airframe stresses resulting from excessive rudder application could cause early failure of the vertical tail section attaching points, something that ran through my mind many years later after hearing of the American Airlines Airbus accident in New York City.

After the systems and aerodynamics lesson, he posed a question to me. "What the hell do you think your passengers are feeling when they're flying sideways?"

He was absolutely right. I was absolutely wrong, but until then I was unaware and uneducated. I didn't get the job, but I took away a priceless education in airmanship, which I carried with me throughout my career.

Soon after this experience I landed my first job with a commuter airline. During the indoctrination training at my new job, the systems instructor posed a question to the class. The question was: "Why don't we slip multiengine airplanes?" I raised my hand and promptly, word for word, recited what the TWA captain had told me. This time, I was absolutely correct and began my airline career, having learned a good lesson from experience. It's a lesson I wish to pass along to you. ♦

—CW4 Dunham is currently in the Indiana Army National Guard. He is an airline pilot with experience in heavy transport airplanes in international operations. He was also the Director of Safety for Vanguard Airlines. Mr. Dunham can be reached by e-mail GCDunham@cs.com.

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AH-64

A Model

■ **Class D**: The crew was conducting a weapons harmonization on the M230 after completion of a 6-month service. The aircraft was at 100 feet above ground level and had fired three 10-round bursts when the gun stopped working. Damage was found to the gun barrel, chain, bolt, and carrier assembly. The damage is suspected to have been caused by a restricted lot of M789. The gun was replaced, and the aircraft was released for flight.

D Model

■ **Class A (Damage)**: The crew was conducting day systems (bag) training with the aircraft level and at 25 to 30 knots indicated airspeed when the aircraft contacted a tree while attempting to land. The aircraft began to spin and impacted the ground. No other details were reported.

■ **Class A (Damage)**: Aircraft experienced a tail rotor failure during flight. The crew lost control of the aircraft while conducting traffic patterns at the base airfield. The post-accident investigation revealed improper maintenance on the tail rotor.

MH-6

M Model

■ **Class C**: The crew was performing a standard autorotation during series qualification when the tail stinger and tail rotor contacted the runway. No other details were reported.

OH-58

D(I) Model

■ **Class B**: The crew received a mast overtorque time limit message after applying power to avoid an obstacle. No other details were reported.

■ **Class C**: Aircraft reportedly struck a tree during flight. The aircraft was landed without further incident. No other details were reported.

TH-67

A Model

■ **Class B**: Aircraft experienced a hard landing following a standard autorotation. The impact spread the landing gear, and the aircraft's underside struck the ground. The aircraft sustained significant structural damage.

UH-1

M Model

■ **Class A**: While conducting a proficiency flight the pilot in command made a mayday call, followed by the aircraft making a vertical descent to impact with the ground. A post-crash fire destroyed the aircraft. The pilot, an Army contractor, was killed on impact.

UH-60

A Model

■ **Class C**: Aircraft's tail rotor struck trees during a hoist operation in a confined area during low-level flight. The aircraft was repositioned and landed without further incident. Damage was reported to the right-hand stabilator and all rotor tip caps.

■ **Class F**: Aircraft was on short final for landing when a large bird was ingested in the #1 engine inlet. The engine made a whining noise, and the crew landed the aircraft without further incident. The engine was removed and maintenance was performed on the GG rotors. After maintenance personnel reinstalled the engine, the aircraft was released for flight.

C-12

■ **Class C**: Aircraft's right main landing gear veered off the side of the runway, causing the right propeller to contact a runway light. The aircraft was repositioned on the runway and shut down without further incident.

■ **Class C**: Aircraft sustained a lightning strike during flight. Post-flight inspection revealed damage to the #2 engine propeller blades and exit damage to the rivets on the right wing's trailing edge.

RQ-7

Shadow Model

■ **Class B**: Air vehicle's instrumentation indicated a sharp increase in RPM, followed by the vehicle's descent and impact with the ground. The vehicle was destroyed.

■ **Class B**: Air vehicle experienced a spike in engine cylinder and rotor temperatures shortly after launch. The vehicle descended to impact with the ground without deployment of the recovery chute.

Editor's note: Information published in this section is based on preliminary mishap reports submitted by units and is subject to change. For more information on selected accident briefs, call DSN 558-9552 (334-255-9552) or DSN 558-3410 (334-255-3410).

'Twas the Night Before Christmas

'Twas the night before Christmas, and out on the ramp,
not an airplane was stirring, not even a Champ.
The aircraft were fastened to tie downs with care
in hopes that come morning, they all would be there.

The fuel trucks were nestled, all snug in their spots,
while peak northwest gusts reached 39 knots.
I sat near the fuel desk, at last all caught up,
and settled down comfortably upon my butt.

When over the radio, there arose such a clatter;
I turned up the scanner to see what was the matter.
A voice clearly heard over static and snow,
asked for clearance to land at the airport below.

He barked out his transmission so lively and quick,
I could have sworn the call sign he used was "St. Nick."
Away to the window, I flew like a flash,
Sure that it was only Horizon's late Dash.

Then he called his position, there could be no denial,
"This is St. Nicholas One, and I'm now turning final."
When what to my wondering eyes should appear,
a Rutan sleigh, and eight Rotax Reindeer.

Cleared for the ILS, down the glide slope he came,
As he passed all fixes, he called them by name:
"Now Ringo! Now Tolga! Now Trini and Bacun!
On Comet! On Cupid!" What pills was he takin'!?

The last several fixes left the controllers confused,
they called down to the office to give me the news.
The message they left was both urgent and dour:
"When Santa pulls in, could he please call
the tower?"

He landed like silk, with the sled runners sparking,
Then I heard "Exit at Charlie," and "Taxi to parking."
He slowed to a taxi and exited Three-Two,
as he came down the taxiway, the sleigh bells' jingle grew.

He stepped out of the sleigh, but before he could talk,
I had run out to him with my best set of chocks.
He was dressed all in fur, which was covered with frost
and his beard was all blackened from Rotax Reindeer exhaust.

His breath smelled like peppermint, gone slightly stale
and he puffed on a pipe, but he didn't inhale.
His cheeks were rosy and jiggled like jelly;
his boots were as black as a crop duster's belly.

He was chubby and plump, a right jolly old fool,
and he kindly informed me that he needed some fuel.
A wink of his eye and a twist of his toes,
led me to know he was desperate to powder his nose.

I spoke not a word, but went straight to work,
and I filled up the sleigh, but I spilled like a jerk.
He came out of the restroom with a sigh of relief,
and then picked up a phone for a flight service brief.

And I thought as he silently scribed in his log,
that with Rudolph he could land in eighth-mile fog.
He completed his preflight, from the front to the rear,
then he put on his headset, and I heard him yell "Clear!"

And laying a finger on his push-to-talk,
he called up the tower for his clearance and squawk.
"After departure fly heading three-two-zero," the tower called
forth, "and watch for a Luscombe inbound from the North."
Then I heard him exclaim, as he climbed in the night,
"Merry Christmas to all, the traffic's in sight."

—Courtesy of Wayne Thompson (Flipper), CE 9th ID, CO B, 9th Avn Bn, (Stingrays), Mar 67- Mar 68

Seasons Greetings!